United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued January 20, 2023 Decided July 7, 2023

No. 22-1107

AMERICAN PUBLIC GAS ASSOCIATION,
PETITIONER

v.

UNITED STATES DEPARTMENT OF ENERGY,
RESPONDENT

AMERICAN GAS ASSOCIATION,
INTERVENOR

Consolidated with 22-1111, 22-1117

On Petitions for Review of a
Final Action of the Department of Energy

Barton Day and *Jason Neal*, argued the causes for petitioners. With them on the joint briefs were *John P. Gregg* and *Christopher J. Wright*.

John Starcher, Attorney, U.S. Department of Justice, argued the cause for respondent. With him on the brief were

Brian M. Boynton, Principal Deputy Assistant Attorney General, and *Michael S. Raab*, Attorney.

Michelle Wu, Ian Fein, Aaron Colangelo, Timothy D. Ballo, Letitia James, Attorney General, Office of the Attorney General for the State of New York, *Brian Lusignan*, Assistant Solicitor General, *Lisa S. Kwong,* Assistant Attorney General, *Kwame Raoul*, Attorney General, Office of the Attorney General for the State of Illinois, *Elizabeth Dubats*, Assistant Attorney General, *Aaron M. Frey,* Attorney General, Office of the Attorney General for the State of Maine, *Katherine E. Tierney*, Assistant Attorney General, *Brian E. Frosh,* Attorney General, Office of the Attorney General for the State of Maryland, at the time the brief was filed, *John B. Howard, Jr.,* Special Assistant Attorney General, *Maura Healey,* Attorney General, Office of the Attorney General for the Commonwealth of Massachusetts, at the time the brief was filed, *Turner Smith,* Assistant Attorney General*, Keith Ellison,* Attorney General, Office of the Attorney General for the State of Minnesota, *Peter N. Surdo*, Special Assistant Attorney General, *Aaron Ford,* Attorney General, Office of the Attorney General for the State of Nevada, *Heidi Parry Stern*, Solicitor General, *Matthew J. Platkin,* Attorney General, Office of the Attorney General for the State of New Jersey, *Paul Youchak*, Deputy Attorney General, *Ellen F. Rosenblum,* Attorney General, Office of the Attorney General for the State of Oregon, *Paul Garrahan*, Attorney in Charge, *Steve Novick*, Special Assistant Attorney General, *Karl A. Racine,* Attorney General, Office of the Attorney General for the District of Columbia, at the time the brief was filed, *Caroline S. Van Zile*, Solicitor General, and *Christopher Gene King* were on the brief for *amici curiae* State, Municipal, and Non-Profit in support of respondent. *Barbara D. Underwood*, Solicitor General, Office of the Attorney General for the State of New York, entered an appearance.

Before: HENDERSON and WILKINS, *Circuit Judges*, and ROGERS, *Senior Circuit Judge*.

Opinion for the Court filed by *Circuit Judge* WILKINS.

WILKINS, *Circuit Judge*: Last year our Court ordered Respondent United States Department of Energy ("DOE" or "Agency") to address three different categories of comments raised during its informal rulemaking establishing more stringent energy efficiency standards for commercial packaged boilers. *See Am. Pub. Gas Ass'n v. DOE*, 22 F.4th 1018 (D.C. Cir. 2022) [hereinafter "*APGA I*"]; *see also* Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers, 85 Fed. Reg. 1592 (Jan. 10, 2020) [hereinafter "Final Rule"]. On remand, the DOE published a supplement to the Final Rule responding to our order. *See* Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers; Response to United States Court of Appeals for the District of Columbia Circuit Remand in *American Public Gas Association v. United States Department of Energy*, 87 Fed. Reg. 23421 (Apr. 20, 2022) [hereinafter "Supplement"]. Petitioners are trade associations and natural gas utilities who assert that they are negatively affected by the Final Rule as supplemented and contend that the Agency failed yet again on remand to properly support its reasoning. They argue further that the DOE failed to provide notice and comment as required under the Administrative Procedure Act ("APA"), *see* 5 U.S.C. § 553(b), (c), despite relying upon additional literature and new empirical evidence in the Supplement.

We agree that the DOE should have provided notice and comment given its reliance on new literature and evidence and that the DOE again failed to offer a sufficient explanation in

response to the comments challenging a key assumption in its analysis. Accordingly, we grant the petitions and vacate the Final Rule and Supplement.

I.

"The Energy Policy and Conservation Act, as amended in 1992, prescribes energy efficiency standards for certain commercial and industrial equipment." *APGA I*, 22 F.4th at 1022 (citing 42 U.S.C. § 6313). Under the Act, the Secretary of Energy is authorized to amend the national efficiency standards to correspond to the industry standards developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers ("ASHRAE"), a private professional association that writes standards and guidelines for the heating, air conditioning, and refrigeration industry. ASHRAE's standards are known as the ASHRAE/IES Standard 90.1. The Act also allows the Secretary to adopt a more stringent standard than what ASHRAE provides if she determines that there is "clear and convincing evidence" that "adoption of a uniform national standard more stringent than the amended ASHRAE/IES Standard 90.1 for the product would result in significant additional conservation of energy and is technologically feasible and economically justified." 42 U.S.C. § 6313(a)(6)(A)(ii)(II).

Originally, the Secretary could not amend the national "energy efficiency standard[s] for equipment covered by Section 6313" except "in response to a corresponding amendment of Standard 90.1 by the ASHRAE." *APGA I*, 22 F.4th at 1022. Congress amended the Act in 2007, adding a "lookback" provision that required the Secretary to "evaluate whether a more stringent standard is necessary for [any] category of equipment" for which AHSRAE had failed to provide an updated standard for six years. *Id.* (citing

42 U.S.C. § 6313(a)(6)(C)(i)). "[E]ven under the 'lookback' provision, the Secretary may establish a more stringent standard only if she determines by clear and convincing evidence that the standard will result in significant conservation of energy, is technologically feasible, and is economically justified." *Id.* As provided in *APGA I*:

> In determining whether a more stringent standard is "economically justified," the Secretary is required to consider "to the maximum extent practicable" (1) "the economic impact of the standard on the manufacturers and on the consumers of the products subject to the standard"; (2) "the savings in operating costs throughout the estimated average life of the product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the products that are likely to result from the imposition of the standard" or, in other words, the difference in the life-cycle cost (LCC) of equipment with and without a more stringent standard; (3) "the total projected quantity of energy savings likely to result directly from the imposition of the standard"; and other factors not relevant here.

Id. (quoting 42 U.S.C. § 6313(a)(6)(B)(ii)).

This case concerns a rule promulgated by the DOE under the Act's "lookback" provision which modified the national energy efficiency standards for commercial packaged boilers.

A.

Commercial packaged boilers are commonly used to heat commercial and institutional buildings such as schools, hotels,

office and apartment buildings, and hospitals. To be defined as a commercial packaged boiler under DOE regulations, a boiler must meet certain criteria, including having "a rated input of at least 300 kBtu/h." *APGA I*, 22 F.4th at 1023 (citing 10 C.F.R. § 431.82). "Rated input means the maximum rate at which the commercial packaged boiler has been rated to use energy." 10 C.F.R. § 431.82. As provided in the Final Rule, "[t]he DOE categorizes packaged boilers based upon their size (small, large, and very large), the type of fuel they use (gas-fired or oil-fired), and their heating medium (hot water or steam)." *APGA I*, 22 F.4th at 1023.

ASHRAE updated the standards for commercial packaged boilers in January 2008 with the release of ASHRAE Standard 90.1-2007. *See* Energy Conservation Program for Certain Industrial Equipment: Energy Conservation Standards and Test Procedures for Commercial Heating, Air-Conditioning, and Water-Heating Equipment, 74 Fed. Reg. 36312, 36315 (July 22, 2009). In 2009, "the DOE promulgated a Final Rule for commercial packaged boilers" that adopted the ASHRAE amendment. *APGA I*, 22 F.4th at 1023. More than six years passed after the release of ASHRAE Standard 90.1-2007 without updates to the ASHRAE standards for commercial packaged boilers, leading to the DOE's proposal for "new, more stringent energy efficiency standards for eight of the twelve categories of commercial packaged boilers" in 2016. *Id.* (citing Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers (Proposed Rule), 81 Fed. Reg. 15836 (Mar. 24, 2016) [hereinafter "2016 Proposed Rule"]).

In the 2016 Proposed Rule, the DOE "tentatively concluded that there [was] . . . clear and convincing evidence to support more stringent standards for most types of commercial packaged boilers." *Id.* (quotation marks omitted).

After notice and comment, the DOE "published its Final Rule [in 2020], which was, as relevant here, substantively equivalent to its Proposed Rule." *Id.* at 1024. The Final Rule expanded the different classes of commercial packaged boilers from 10 to 12 and amended the standards to "prescribe [more stringent] minimum thermal efficiencies (E_T) or combustion efficiencies (E_C)" that "apply to all equipment listed in [the Rule] and manufactured in, or imported into, the United States on and after the compliance dates" set by the Agency. 85 Fed. Reg. at 1594. Compliance was mandated for the boilers subject to the amended energy conservation standards by January 10, 2023, three years after the Final Rule was published. *Id.*

As discussed above, the Act requires the DOE to account for "'the economic impact of the proposed standard . . . on the consumers of the products subject to the standard' and the difference in [life-cycle cost] savings the standard would bring about." *APGA I*, 22 F.4th at 1023 (quoting 42 U.S.C. § 6313(a)(6)(B)(ii)(I)–(II)). In the Final Rule, the DOE sought to meet this statutory obligation by developing a statistical model to compare a valuation of the life-cycle cost assuming the Agency did not impose a new standard (the "Base Case") with a valuation of the life-cycle cost that the market would bear should the Agency impose a new standard ("New Standards Case"). *Id.* "The [life-cycle cost] of any piece of equipment is the sum of (a) the purchase price (including installation cost and sales tax) and (b) the lifetime cost of operating it (fuel, maintenance, and repair), discounted to present value." *Id.* The DOE also calculated the payback period to further understand the costs and savings associated with the proposed standards. The payback period is expressed in years and "is the amount of time it takes the consumer to recover the additional installed cost of more-efficient equipment, compared to baseline equipment, through energy cost savings." 81 Fed. Reg. at 15875.

As provided in the DOE's Technical Support Document, the Agency's statistical model used "Microsoft Excel® spreadsheets combined with Crystal Ball®, a commercially available simulation add-in, to conduct probability analyses" that employed a "Monte Carlo simulation and probability distributions." J.A. 351. A "Monte Carlo simulation . . . randomly generates values for uncertain variables again and again to simulate a model." *Id.* at 352. These simulations "can consist of as many trials (or scenarios) as desired—hundreds or even thousands." *Id.* "During a single trial, Crystal Ball randomly selects a value from the defined possibilities (the range and shape of the probability distribution) for each uncertain variable and then recalculates the spreadsheet." *Id.* The DOE's "Monte Carlo simulation consists of 10,000 [life-cycle cost] and [payback period] calculations using input values that are either sampled from probability distributions and building samples or characterized with single point values." 85 Fed. Reg. at 1626.

The Agency used the Energy Information Administration's 2012 Commercial Building Energy Consumption Survey and the 2009 Residential Energy Consumption Survey to compile a representative sample of commercial and residential buildings. 87 Fed. Reg. at 23422. "[B]oth are national sample surveys that collect information on the stock of commercial and residential buildings, including both building characteristics and energy usage data (including consumption and expenditures)." Resp't Br. 17–18 (quotation marks omitted). Next, the DOE had to "estimate . . . the efficiency of the boilers that would be sold absent the Rule." *Id.* at 16–17. It used shipment data provided by Petitioner Air-Conditioning, Heating, and Refrigeration Institute ("AHRI") "to analyze trends within equipment classes, as it relate[d] to efficiency levels, to determine the anticipated [Base Case] efficiency distribution in 2020, the assumed compliance year

for amended standards." 85 Fed. Reg. at 1635. Since "the DOE had historical shipping data for only two of the eight relevant categories of boilers . . . it assumed the distribution of efficiency levels in shipped equipment was the same as the distribution of efficiency levels among models listed in the database maintained by the AHRI." *APGA I*, 22 F.4th at 1023. In *APGA I*, we held that "DOE's reliance upon th[is] proxy data" was reasonable since it had been "empirically validated" by the Agency. *Id.* at 1030.

With both the representative market and an estimate of the various boilers of different efficiency levels that would be sold in the Base Case, the Agency had to predict which boilers—based on efficiency level—would be purchased for each sample building. To do so, the DOE randomly assigned boilers to the sample buildings given the share of boilers that would be sold, such that, for example, "[a]n efficiency level associated with 30 per cent of the models listed in the AHRI data base had a 30 per cent chance of being selected for any given boiler/building combination." *Id.* at 1024. Accordingly, the assignment, while random, was "constrained by the shipment and model data collected by DOE and submitted by AHRI." 87 Fed. Reg. at 23423.

The DOE also made several other assumptions and analytical choices to calculate costs. The Agency assumed for "the heat load (the amount of heat energy per unit of time that is needed to maintain a certain temperature in a defined space) of the sample buildings" "that for every square foot of heated area, a building uses an average of 30 Btu/h." *APGA I*, 22 F.4th at 1024 (citing 85 Fed. Reg. at 1624). This assumption allowed the DOE "to calculate the burner operating hours and the energy use of a given boiler in any boiler/building combination" for both the Base Case and New Standards Case. *Id.* The DOE also assumed that the lifetime of a boiler would

be 24.8 years and used "energy prices forecasted in the Energy Information Administration's 2016 Annual Energy Outlook" to "estimate the operating cost associated with energy use for any given boiler/building combination." *Id.* "For electricity and natural gas prices, the DOE . . . applied 'seasonal marginal price factors' to obtain marginal fuel prices, which it said better represent the cost to the consumer of changes in energy consumption." *Id.* at 1028. "For oil, however, the DOE used the average prices, because it did not have sufficient data to convert average prices into marginal prices." *Id.*

The Agency found that "[t]he average [life-cycle cost] savings [were] positive for all equipment classes, and the [payback period] [was] less than the average lifetime of the equipment." 85 Fed. Reg. at 1594. The Agency's analysis, including a discussion of the DOE's various assumptions and analytical methods, is explained in further detail in the Final Rule and Technical Support Document.

B.

Petitioners American Public Gas Association ("APGA") and AHRI are both trade associations. APGA represents retail natural gas distribution entities owned by local governments, and AHRI's members manufacture commercial packaged boilers. Petitioner Spire, Inc. owns and operates natural gas distribution companies, and its subsidiaries—Petitioners Spire Alabama Inc. and Spire Missouri Inc.—are natural gas utilities that serve residential, commercial, and institutional customers in Alabama and Missouri. Originally, Petitioners, excluding Spire Alabama Inc., submitted several challenges to the Final Rule, the "most meritorious" of which "target[ed] the assumptions and data the DOE used to conclude that more

stringent efficiency standards were economically justified by clear and convincing evidence." *APGA I*, 22 F.4th at 1026.

First, Petitioners challenged the Agency's random assignment of boilers to sample buildings, arguing that "the DOE failed to recognize that a purchaser of commercial packaged boilers would rationally consider the costs and benefits of its investment and is likely to buy the boiler that produces the best economic performance for its building." *Id.* at 1027. In the Final Rule, the Agency "noted that 'development of a complete consumer choice model, to support an alternative to random assignment in the no-new-standards case, for boiler efficiency would require data that are not currently available, as well as recognition of the various factors that impact the purchasing decision.'" *Id.* (quoting 85 Fed. Reg. at 1638). The DOE also "list[ed] several possible market failures as 'problems that this standards [sic] address.'" *Id.* (second alteration in original) (quoting 85 Fed. Reg. at 1676). The Court found that "[t]he significant concerns the petitioners raised about [random] assignment . . . demand[ed] a more complete response," especially given the importance of boiler assignment to the life-cycle cost analysis. *Id.* The Court faulted the DOE for "essentially sa[ying] it did the best it could with the data it had" "[i]nstead of producing evidence of some market failure in this specific market." *Id.* Given the lack of "a cogent and reasoned response to the substantial concerns the petitioners raised about this crucial part of its analysis," the Court held that it "[could not] say it was reasonable for the DOE to conclude that clear and convincing evidence support[ed] the adoption of a more stringent standard." *Id.* at 1028.

Second, Petitioners challenged the DOE's prediction of energy prices, claiming "the average prices the DOE used d[id] not reflect the marginal prices paid by purchasers of

commercial packaged boilers." *Id.* Petitioners noted that "operators of commercial packaged boilers . . . receive volume discounts and enter into hedging contracts, and therefore pay significantly less" because they "are among the largest purchasers of fuel from energy utilities." *Id.* They asserted that "DOE significantly overstated the savings associated with promulgation of a stricter standard" since the use of "predicted average energy prices" did not capture the significantly lower cost paid by purchasers of commercial packaged boilers. *Id.* "The DOE responded that the data sets it used '[were] the best aggregate sources for energy prices currently available' and it 'incorporated many adjustment factors to the average price data and the price trend data to account for the price differences due to variations in locations, seasons, and market sectors and to ensure that the energy prices are properly accounted for in the economic analysis.'" *Id.* (quoting 85 Fed. Reg. at 1632). The Court found the DOE's response to be "conclusory, not explanatory." *Id.* Specifically, the Court noted that the response failed to address "the lower prices for fuel allegedly paid by those who operate commercial packaged boilers." *Id.*

Finally, as relevant here, Petitioners "challenge[d] the DOE's estimates for burner operating hours." *Id.* at 1029. Since it lacked actual burner operating hour data, the Agency estimated them based on certain building data "and assumptions about heat load, including the adoption of a rule of thumb that for every square foot of heated area, a building uses 30 Btu/h." *Id.* During notice and comment, the following "purported anomalies in the DOE's estimates" were raised by a consultant for AHRI, as discussed in *APGA I*:

> "[C]ommercial buildings are generally cooling load dominated so it would be highly unusual to have one thousand system operating hours per year," yet according to DOE's estimates, the

> median burner operating hours for six of eight categories of burners was more than 1000 hours, the 90th percentile of two of the eight categories was more than 2000 operating hours, and the maximum burner operating hours in all categories was well over 2000 hours. Further, DOE "surprisingly," he said, estimated that the median, 90th percentile, and maximum burner hours for large boilers are lower than the median, 90th percentile, and maximum burner hours for small boilers of the same type. These results, the consultant argued, should have alerted the DOE to the possibility that either its assumption about heat load or the data from [Commercial Building Energy Consumption Survey] were faulty.

Id. While the DOE "twice acknowledged these comments in the Final Rule," it "did not respond to them." *Id.* Without providing a reason, "DOE reiterated that it 'ha[d] high confidence that its building load estimation is representative of the building loads in the field.'" *Id.* (quoting 85 Fed. Reg. at 1624). Similar to aforementioned responses, the Agency "explained that '[it] ha[d] not identified a source of comprehensive burner operating hour data for commercial boilers that could be used for such an analysis nor was such identified to DOE by stakeholders.'" *Id.* (quoting 85 Fed. Reg. at 1637). The Court noted that "[u]sing data ill-suited to the task is not excused by failure—even good faith failure—to locate suitable data, particularly considering that the Congress here required clear and convincing evidence before the Secretary can disturb the regulatory status quo." *Id.* Accordingly, we ordered the DOE to provide a "reasoned response to these concerns as well." *Id.*

The Court characterized the "deficiencies of the [Final Rule] . . . as failures to explain, the type of deficiency most readily remedied on remand." *Id.* at 1031. Accordingly, the Court found that "remanding the Final Rule to the DOE to reevaluate it within a limited time [was] the proper remedy." *Id.* at 1030–31. The opinion issued on January 18, 2022, and gave the DOE 90 days "to take appropriate remedial action" or "the Final Rule [would] automatically be vacated unless the agency demonstrate[d] within ten days of the issuance of th[e] decision the need for additional time." *Id.* at 1031. We originally withheld issuance of the mandate to allow time for the parties to petition for rehearing, and—after no petition materialized—issued the formal mandate to the DOE on March 14, 2022.

On March 23, 2022, Petitioners filed a joint submission on the DOE docket, discussing their view on "the issues DOE faced on remand" and requesting that the Agency defer enforcement of the new standards or stay the Rule pending judicial review arising from any appeal of the DOE's final action. Pet'rs Br. 11; *see also* J.A. 497–98. On April 20, 2022, the Agency published the Supplement to the Final Rule. While the Supplement did not discuss the Petitioners' March 2022 request, it did respond to the three challenges raised in *AGPA I*.

Initially, Petitioners tried to challenge the Final Rule as supplemented by filing a motion to vacate in the original appeal docket. *See* Joint Mot. to Vacate, *Am. Pub. Gas. Ass'n v. DOE*, No. 20-1068 (D.C. Cir. Apr. 28, 2022). The Court denied the motion since the case was remanded and our rules require "a new . . . petition for review . . . [for] . . . a party [to] seek[] review of the proceedings conducted on remand." D.C. CIR. R. 41(b); *see also* Order, *Am. Pub. Gas. Ass'n v. DOE*, No. 20-1068 (D.C. Cir. June 1, 2022) (per curiam). APGA filed its

petition on June 14, 2022, and AHRI and Spire filed separate petitions for review on June 15, 2022, and June 16, 2022, respectively. After the petitions were consolidated, Petitioners unsuccessfully moved the Court to stay the enforcement of the Final Rule pending appeal. *See* Order, *Am. Pub. Gas. Ass'n v. DOE*, No. 22-1107 (D.C. Cir. Aug. 17, 2022) (per curiam).

Petitioners assert that the DOE failed to adequately explain its reasoning as required on remand. Further, they contend the Agency should have provided an opportunity for notice and comment prior to filing the Supplement and, regardless, that the Final Rule as supplemented fails to meet the clear and convincing standard required by the Energy Policy and Conservation Act.

II.

This Court has jurisdiction to review the Final Rule as supplemented pursuant to 42 U.S.C. §§ 6306(b) and 6316. Petitioners have demonstrated standing through declarations attesting to their expectations of economic losses caused by the Final Rule that may be remedied by vacatur of the rule. *See generally Sierra Club v. Morton*, 405 U.S. 727, 733–34 (1972). The Court reviews the Final Rule and Supplement under the APA. *See APGA I*, 22 F.4th at 1024–25 (citing 5 U.S.C. § 706(2)(A)).

The APA "requires [the Court] to hold unlawful agency action that is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.'" *Susquehanna Int'l Grp., LLP v. SEC*, 866 F.3d 442, 445 (D.C. Cir. 2017) (quoting 5 U.S.C. § 706(2)(A)). Under this standard, "this Court is highly deferential to the agency's decision and presumes that the agency action is valid." *Oceana, Inc. v. Ross*, 920 F.3d 855, 863 (D.C. Cir. 2019) (quotation marks omitted). The Court is "not a 'rubber stamp,'" however, and "must ensure the agency

considered all of the relevant factors." *Id.* (quoting *Ethyl Corp. v. EPA*, 541 F.2d 1, 34 (D.C. Cir. 1976) (en banc)). "[T]he focal point for judicial review should be the administrative record already in existence, not some new record made initially in the reviewing court." *Camp v. Pitts*, 411 U.S. 138, 142 (1973) (per curiam).

Under the Energy Policy and Conservation Act, "the Secretary is not authorized to establish a more stringent efficiency standard for commercial packaged boilers . . . unless there is clear and convincing evidence that the standard would result in significant additional conservation of energy, would be technologically feasible, and is economically justified." *APGA I*, 22 F.4th at 1025 (citing 42 U.S.C. § 6313(a)(6)(C)(i)(I)–(II)). "[C]lear and convincing evidence requires a factfinder (in this case the Secretary) to have an 'abiding conviction' that her findings (in this case that a more stringent standard would result in significant additional conservation of energy, would be technologically feasible, and is economically justified) are 'highly probable' to be true." *Id.* (quoting *Colorado v. New Mexico*, 467 U.S. 310, 316 (1984)). "Even where clear and convincing evidence is required before an agency can act, however, judicial review of agency action remains deferential." *Id.* at 1025–26. "The court asks itself only whether it was reasonable for the agency to determine it met the standard." *Id.* at 1026.

We discuss each of Petitioners' challenges in turn.

A.

APGA I required the DOE to provide a cogent and reasoned response to Petitioners' challenges to the Agency's use of random assignment to model boiler purchases in its life-cycle cost model. *See APGA I*, 22 F.4th at 1027–28. Petitioners contend that the DOE should have provided notice

and comment since the DOE's response to our order relied on new studies and documentation. We agree.

On remand, the DOE supported its use of random assignment with a more detailed explanation of the various market failures and behavioral biases it contends lead to "irrational" energy investment decisions in the market for commercial packaged boilers, such as purchasing a less efficient boiler even when a more efficient model might have lower upfront or lifetime costs. In the Supplement, the Agency referenced studies that it claimed "demonstrate the existence of market failures preventing the adoption of energy-efficient technologies in a variety of commercial sectors around the world, including office buildings, supermarkets, and the electric motor market." 87 Fed. Reg. at 23425. It also cited corroborating datasets to demonstrate that boilers of various efficiency levels "are installed in a variety of building types and that the building characteristics do not correlate strongly with the existing boiler efficiency." *Id.* at 23427. These datasets included: (1) "data from the Federal Energy Management Program ('FEMP') on commercial gas-fired hot water boiler installations in government buildings from 2000 to 2013"; (2) "recent installation data and case studies for areas within the North region"; and (3) a regional study published in 2020 "characterizing the energy consumption and building characteristics of commercial buildings throughout the Northwest region of the country." *Id.* at 23425–23426.

Generally, "the 'technical studies and data' upon which the agency relies" "must be revealed for public evaluation." *Chamber of Com. of U.S. v. SEC*, 443 F.3d 890, 899 (D.C. Cir. 2006) (quoting *Solite Corp. v. EPA*, 952 F.2d 473, 484 (D.C. Cir. 1991)). This requirement remains binding on the agency even after our Court has remanded a rule for further explanation, including when an "agency determines that

additional fact gathering is necessary" on remand. *Id.* at 900. While we have recognized certain exceptions to this requirement, *see id.* (collecting cases), none apply here.

First, the DOE contends that notice and comment was unnecessary on remand because the Final Rule merely "advanced 'a hypothesis' and some supporting explanation," and the Supplement "provided additional support for that hypothesis . . . but . . . did not reject or modify the hypothesis such that additional comment was necessary." Resp't Br. 56 (quoting *Bldg. Indus. Ass'n of Superior Cal. v. Norton*, 247 F.3d 1241, 1246 (D.C. Cir. 2001)). As we held in *Building Industry*, "a final rule that is a logical outgrowth of the proposal does not require an additional round of notice and comment even if the final rule relies on data submitted during the comment period." 247 F.3d at 1246. In *Building Industry*, however, the agency provided more than an unsupported explanation to bolster its hypothesis. Instead, the agency's "proposal advanced for comment a hypothesis and some *supporting data*." *Id.* (emphasis added). The additional study relied upon, "released after the proposal," *id.* at 1245, provided "additional support for that hypothesis—indeed, better support than was previously available," *id.* at 1246.

Such was the case in *International Fabricare Institute v. EPA*, another authority cited by the DOE. 972 F.2d 384 (D.C. Cir. 1992) (per curiam). In that case, the petitioner challenged the EPA's newly adopted "regulations establish[ing] permissible concentration levels for contaminants occurring in drinking water." *Id.* at 387. The agency had to determine which method it would use to "ascertain how low a concentration of [a regulated] chemical reliably [could] be measured when testing water to determine compliance with the limit." *Id.* at 398. In its original notice of the rulemaking, "the EPA acknowledged . . . that [the chosen method's] accuracy

had been verified in only one laboratory" and sought comments on the proposed approach. *Id.* at 399 (citations omitted). After receiving comments challenging the reliability of the method, the EPA promulgated the regulations, relying upon additional studies "conducted by private laboratories [that] [i]n the EPA's view . . . adequately confirmed the reliability of [its chosen method]." *Id.* As in *Building Industry*, the EPA's original notice referenced some documentation in support of the challenged approach, specifically the verification of the chosen method by one laboratory. We held that notice and comment was unnecessary since the *Fabricare* "petitioners had fair notice of, and full opportunity to comment on, the issue actually decided by the EPA." 972 F.2d at 399.

Here, the new studies and datasets referenced in the Supplement did not "address[] 'alleged deficiencies' in [any] pre-existing data." *Solite Corp.*, 952 F.2d at 484 (quoting *Cmty. Nutrition Inst. v. Block*, 749 F.2d 50, 58 (D.C. Cir. 1984)). Instead, the additional materials referenced in the Supplement provided "entirely new information 'critical' to the [Agency's] determination" of life-cycle costs. *Block*, 749 F.2d at 58. In *APGA I*, we explained that "we [could not] say it was reasonable for the DOE to conclude that clear and convincing evidence support[ed] the adoption of a more stringent standard" absent a "cogent and reasoned response to the substantial concerns the petitioners raised" about the Agency's use of random assignment. *APGA I*, 22 F.4th at 1028. Absent the cited studies and corroborating documentation, the DOE fails to adequately explain how there is a "rational relationship" between their model and the purchasing behavior in the market for commercial packaged boilers. *Am. Iron & Steel Inst. v. EPA*, 115 F.3d 979, 1004 (D.C. Cir. 1997) (per curiam) (quoting *Chem. Mfrs. Ass'n v. EPA*, 28 F.3d 1259, 1265 (D.C. Cir. 1994)). The cited materials were necessary to respond to our order and justify a key input in the life-cycle cost analysis.

Because they were relied upon for the first time on remand, the Agency should have provided an opportunity for notice and comment as required by the APA. *See* 5 U.S.C. § 553(b), (c).

Second, the DOE argues that it should be excused from the APA's notice and comment requirements because Petitioners have failed to demonstrate that they were "prejudiced by [the] lack of opportunity to comment." *Chamber of Com.*, 443 F.3d at 904. Specifically, the Agency contends that Petitioners fail to "specify what objectionable new information the Department relied on" and "what they would have submitted in response to that information beyond what was already submitted during earlier notice and comment." Resp't Br. 62–63 (citing 5 U.S.C. § 706 and *Chamber of Com.*, 443 F.3d at 904).

Petitioners do not have a high burden in demonstrating "prejudice in notice-and-comment cases." *Chamber of Com.*, 443 F.3d at 904. In general, "an utter failure to comply with notice and comment cannot be considered harmless if there is any uncertainty at all as to the effect of that failure." *Sugar Cane Growers Co-op. of Fla. v. Veneman*, 289 F.3d 89, 96 (D.C. Cir. 2002). Accordingly, those objecting to an agency's late reference to critical documents can demonstrate prejudice by creating "enough 'uncertainty [as to] whether petitioner's comments would have had some effect if they had been considered.'" *Chamber of Com.*, 443 F.3d at 904 (quoting *McLouth Steel Prods. Corp. v. Thomas*, 838 F.2d 1317, 1324 (D.C. Cir. 1988)).

Petitioners make several objections to the studies and datasets cited in the Supplement. They note that the referenced studies are too "generic" to apply to the market for commercial packaged boilers. Pet'rs Br. 37. Petitioners also contend that the datasets which the DOE references to "demonstrate[] [the]

relevant market failures would—at most—have incremental impacts insufficient to justify random assignment." *Id.* at 38. Petitioners have "indicate[d] with 'reasonable specificity'" "the nature of [their] objection[s]" and "how [they] might have responded if given the opportunity." *Air Transp. Ass'n of Am. v. FAA*, 169 F.3d 1, 8 (D.C. Cir. 1999) (quoting *Air Transp. Ass'n of Am. v. CAB*, 732 F.2d 219, 224 n.11 (D.C. Cir. 1984)). These objections provide enough uncertainty as to whether the Petitioners' comments would have influenced the Agency's decision had they been given the opportunity to comment. Further, Petitioners "had no knowledge of the new information until" the Supplement was published "and had no subsequent opportunity to provide comments." *Id.* Under these circumstances, Petitioners have demonstrated prejudice from the DOE's failure to provide notice and comment.

Third, the Agency contends that the APA's "good cause" exception to notice and comment should apply. It claims that "a new round of notice and comment was not expected by this Court and would have been impracticable" given the court-imposed 90-day deadline with only the first 10 days after the mandate issued made available for the Agency to request an extension. Resp't Br. 59. It compares the situation to *Methodist Hospital of Sacramento v. Shalala*, an appeal in which this Court held that notice and comment was impracticable due, in part, to the tight deadlines imposed by Congress. 38 F.3d 1225, 1237 (D.C. Cir. 1994). The Agency contends that our "Court has found good cause where there is no indication that the agency 'had a substantial period of time within which to propose regulations' or that the agency abused the deadline by 'simply waiting until the eve of . . . the deadline, then raising up the "good cause" banner.'" Resp't Br. 60 (quoting *Methodist*, 38 F.3d at 1237) (emphasis omitted).

The Agency misreads our holding in *Methodist*. In that case, we reiterated that "strict congressionally imposed deadlines, without more, by no means warrant invocation of the good cause exception." *Methodist*, 38 F.3d at 1236 (quoting *Petry v. Block*, 737 F.2d 1193, 1203 (D.C. Cir. 1984)). However, we found the good cause exception applied since the "congressional deadlines [were] very tight and . . . the statute [was] particularly complicated." *Id.* Among other things, we noted that the situation in *Methodist* differed from other "cases where the court has found strict deadlines alone insufficient to establish good cause" because in the relevant statutory scheme "Congress ha[d] expressed its clear intent that APA notice and comment procedures need not be followed." *Id.* at 1237 (citations omitted). The DOE makes no claim that the Energy Policy and Conservation Act imposes a similarly complex set of procedures as in *Methodist*. A tight "statutory, judicial, or administrative deadline" alone, *Council of S. Mountains, Inc. v. Donovan*, 653 F.2d 573, 581 (D.C. Cir. 1981) (per curiam), "by no means warrant[s] invocation of the good cause exception," *Methodist*, 38 F.3d at 1236.

"[T]he good cause exception is to be narrowly construed and only reluctantly countenanced." *Mack Trucks, Inc. v. EPA*, 682 F.3d 87, 93 (D.C. Cir. 2012) (quotation marks omitted). We have typically applied the good cause exception to "excuse[] notice and comment in emergency situations, where delay could result in serious harm, or when the very announcement of a proposed rule itself could be expected to precipitate activity by affected parties that would harm the public welfare." *Chamber of Com.*, 443 F.3d at 908 (citations omitted). Here, where none of the aforementioned circumstances applied and the Agency declined to seek an available extension of its compliance deadline, the DOE lacked good cause to adopt the Final Rule as supplemented absent public comment on the new studies and documentation it relied

upon. Since we find that the DOE lacked good cause to dispense with the required notice and comment procedures, we do not reach Petitioners' alternative argument that the Agency failed again on remand to provide a cogent and reasoned response to the concerns raised about the DOE's use of random assignment.

B.

In *APGA I*, the Court required the DOE to address Petitioners' concerns with the Agency's use of certain fuel prices that informed its life-cycle cost analysis, specifically whether the data sets it used captured "the lower prices for fuel allegedly paid by those who operate commercial packaged boilers." 22 F.4th at 1028. The Court characterized the DOE's original response as "conclusory, not explanatory," specifically describing the response as follows:

> The DOE responded that the data sets it used "are the best aggregate sources for energy prices currently available" and it "incorporated many adjustment factors to the average price data and the price trend data to account for the price differences due to variations in locations, seasons, and market sectors and to ensure that the energy prices are properly accounted for in the economic analysis."

Id. (quoting 85 Fed. Reg. at 1632).

On remand, the Agency did more than simply say the U.S. Energy Information Administration ("EIA") data it relied on was "the best aggregate source[] for energy prices." *Id.* It explained specifically how the data captured the prices paid by all consumers. In the Supplement, the DOE "emphasize[d] that the EIA data provide[d] complete coverage of all utilities and

all customers, including larger commercial and industrial utility customers that may have discounted energy prices." 87 Fed. Reg. at 23428. Though the DOE conceded that it "was unable to identify data to provide a basis for determining a potentially lower price for larger commercial and industrial utility customers, either on a state-by-state basis or in a nationally representative manner," the Supplement explained that "the historic data on which DOE did rely includes such discounts." *Id.* at 23429. The DOE finally asserted that any adjustment to its analysis—such as "to adjust downward the marginal energy price for a small subset of individual customers in the [life-cycle cost] Monte Carlo sample as suggested by commenters"—would "yield[] substantially the same overall average [life-cycle cost] savings result as DOE's current estimate" since that data already includes "actual utility rates paid by all customers." *Id.* In our view, the Agency provided a "cogent response" that adequately addressed Petitioners' concerns about "the lower prices for fuel allegedly paid by those who operate commercial packaged boilers." *APGA I*, 22 F.4th at 1028.

For the first time in rebuttal, however, Petitioners fault the natural gas prices data used by the DOE for failing to include one category of large consumers in its analysis: industrial and manufacturing facilities. They point to the Final Rule's citation to an EIA website describing that the natural gas pricing data used by the DOE "indicate[s] that it is limited to 'nonmanufacturing establishments.'" Pet'rs Reply Br. 14 n.4 (citing J.A. 360–61); *see also* J.A. 373.

"We require petitioners and appellants to raise all of their arguments in the opening brief to prevent 'sandbagging' of appellees and respondents and to provide opposing counsel the chance to respond." *Corson & Gruman Co. v. NLRB*, 899 F.2d 47, 50 n.4 (D.C. Cir. 1990). There is an exception to this

general rule allowing a petitioner, "in a reply brief, [to] respond to arguments raised for the first time in the [respondent's] brief." *United States v. Powers*, 885 F.3d 728, 732 (D.C. Cir. 2018) (quotation marks omitted). This exception applies when a petitioner could not be "required to assume in [their] opening brief that the [opposing party] would rely on" a specific argument. *Id.* Here, however, the DOE's argument was foreseeable since the Supplement provided that the "DOE's current approach . . . captures the impact of actual utility rates paid by all customers, including those that enjoy lower marginal rates for whatever reason, in an aggregated fashion." 87 Fed. Reg. at 23429. Petitioners did not have to "assume" the Agency's argument, because they had it right before them from the start. *Powers*, 885 F.3d at 732.

Accordingly, Petitioners have forfeited this argument. We find that the Final Rule as supplemented provides a sufficient response to Petitioners' concerns about the fuel prices used in the DOE's life-cycle cost analysis.

C.

In *APGA I*, the Court required the DOE to address Petitioners' concerns that the estimated burner operating hours used in the life-cycle cost analysis were anomalous and the "possibility that either [the DOE's] assumption about heat load or the data from [the Commercial Building Energy Consumption Survey] were faulty." 22 F.4th at 1029. Petitioners argue that the Final Rule as supplemented still ignores these comments by failing to address its "energy-use assumption" and erroneously suggesting that "burner operating hours have minimal impact on the results of its analysis." Pet'rs Br. 43–44.

On remand, the Agency provided a more detailed description of how the underlying Commercial Building

Energy Consumption Survey data reflects real-world building energy use. *See* 87 Fed. Reg. at 23429–23430. It also described how the seemingly anomalous burner operating hour results were actually reflective of real world conditions in which both boiler size and other factors like the climate or the age of the building require longer and higher burner operating hours. *Id.* at 23430. At the same time, however, the DOE failed to address the impact of its underlying assumption "that for every square foot of heated area, a building uses an average of 30 Btu/h." *APGA I*, 22 F.4th at 1024. In a colloquy with the Court, the DOE's counsel conceded that there was no explanation at all in the Supplement to support the Agency's 30 Btu/h assumption. Oral Arg. Tr. 28.

Even if burner operating hours may be a "derived quantity" as the Agency argues, *see* Resp't Br. 51 (quoting 87 Fed. Reg. at 23430), the "30 Btu/h" figure is an input into the DOE's calculation that commenters complained caused erroneous building load estimations separate from the concerns raised about the Commercial Building Energy Consumption Survey data. *See, e.g.*, J.A. 202, 389. In *APGA I*, we held that these concerns required a "reasoned response," yet DOE provided no additional explanation for the assumption on remand. 22 F.4th at 1029.

We review the DOE's "rulemaking under the 'lookback' provision" under the APA, *id.* at 1024, with the "further wrinkle" that "clear and convincing evidence is required before [the] [A]gency can act," *id.* at 1025. The Court must "ask[] . . . whether it was reasonable for the agency to determine it met the [clear and convincing evidence] standard." *Id.* at 1026. "The 'scope of review' provisions of the APA, 5 U.S.C. § 706(2), are cumulative." *Ass'n of Data Processing Serv. Orgs., Inc. v. Bd. of Governors of Fed. Rsrv. Sys.*, 745 F.2d 677, 683 (D.C. Cir. 1984). "Thus, an agency action which

is supported by the required substantial evidence may in another regard be 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law'—for example, because it is an abrupt and unexplained departure from agency precedent." *Id.* Similarly, the Court may find the DOE's failure to explain and justify the "30 Btu/h" assumption on remand to be "arbitrary and capricious" without determining whether that omission demonstrated the Agency acted without the requisite "clear and convincing" evidence.

Again, the DOE has "fail[ed] to engage the arguments raised before it." *APGA I*, 22 F.4th at 1027 (quotation marks omitted).

III.

"'[V]acatur is the normal remedy' when a rule is found unlawful." *APGA I*, 22 F.4th at 1030 (quoting *Allina Health Servs. v. Sebelius*, 746 F.3d 1102, 1110 (D.C. Cir. 2014)). Under certain circumstances, however, the Court may remand without vacatur and allow the agency to "fix the deficient rule." *Id.* "The decision to vacate depends on two factors: the likelihood that 'deficiencies' in an order can be redressed on remand, even if the agency reaches the same result, and the 'disruptive consequences' of vacatur." *Black Oak Energy, LLC v. FERC*, 725 F.3d 230, 244 (D.C. Cir. 2013) (quoting *Allied-Signal v. Nuclear Regul. Comm'n*, 988 F.2d 146, 150–51 (D.C. Cir. 1993)).

For the first factor, we have discussed two significant deficiencies with the Final Rule as supplemented. The Agency failed to provide notice and comment despite its reliance on new studies and data critical to supporting its use of random assignment to assign boilers in the life-cycle cost analysis. The DOE also failed to address challenges to its 30 Btu/h

assumption in calculating burner operating hours for the life-cycle cost analysis for the second time.

As to the second factor, the DOE contends that vacatur of the Final Rule would result in "significant disruption of the status quo" since the Final Rule went into effect on January 10, 2023, and some consumers and manufacturers would have to manage switching back to the prior standards after several years of preparing to comply with the new, more stringent standards. Resp't Br. 65–66. Further, the Agency argues that vacatur would harm the public given the loss of the significant environmental and health benefits expected from the new efficiency standards. It contends that the harm of losing these benefits would be "long-lived" since noncompliant boilers, with an expected lifetime use of approximately 25 years, would be manufactured and sold. *Id.* at 67–68. Even should the Agency repromulgate the rule, it asserts that there is little chance noncompliant boilers manufactured and sold in the interim would be replaced with compliant boilers in the near term. Petitioners also concede that the effect of the Final Rule has resulted in "[s]ome manufacturers hav[ing] already suffered irreparable injuries." Pet'rs Reply Br. 28.

The disruptive consequences of vacatur are apparent, and we are "sensitive to the risk of interfering with environmental protection, which is one potential disruptive consequence" raised by the DOE. *North Carolina v. EPA*, 531 F.3d 896, 929 (D.C. Cir.) (per curiam), *modified on reh'g in part*, 550 F.3d 1176 (D.C. Cir. 2008). However, none of the DOE's arguments demonstrate that "[t]he egg has been scrambled and there is no apparent way to restore the status quo ante," namely the state of affairs under the prior, less stringent standards. *Sugar Cane Growers*, 289 F.3d at 97. As Petitioners state, vacatur would allow "manufacturers to resume production of boilers" that meet either standard, and it is undisputed that

"many manufacturers already sell, and a significant number of consumers already purchase, boilers that meet DOE's more-stringent standard." Pet'rs Reply Br. 28. Separately, even though we have found the DOE's explanation regarding fuel prices sufficient, "leaving the regulations in place during remand would ignore [P]etitioners' potentially meritorious challenges" related to the use of random assignment, which we have chosen not to reach given the lack of notice and comment, and regarding the 30 Btu/h assumption that the DOE failed to explain. *Cement Kiln Recycling Coal. v. EPA*, 255 F.3d 855, 872 (D.C. Cir. 2001) (per curiam).

"[T]he [C]ourt typically vacates rules when an agency entirely fails to provide notice and comment." *Daimler Trucks N. Am. LLC v. EPA*, 737 F.3d 95, 103 (D.C. Cir. 2013) (quotation marks omitted). The DOE's "fail[ure] to comply with our remand order" also counsels toward vacatur, since it has yet again "come up with insufficient support" for the 30 Btu/h assumption. *Tex Tin Corp. v. EPA*, 992 F.2d 353, 356 (D.C. Cir. 1993). We see no reason to break from our established practice when for the second time "we are not persuaded it was reasonable for the Secretary to conclude the Final Rule was supported by clear and convincing evidence." *APGA I*, 22 F.4th at 1022.

In sum, we grant the petitions and vacate the Final Rule as supplemented. We remand to DOE for further proceedings consistent with this opinion.

So ordered.